U.S. FISH AND WILDLIFE SERVICE - SPOTLIGHT SPECIES ACTION PLAN

Common Name: Guadalupe Fescue

Scientific Name: *Festuca ligulata* Swallen

Lead Region: 2

Lead Field Office: Austin ESFO

Species Information:

Status: Candidate

Listing Priority Number: 11

Candidate Assessment Form: CNOR 10 December, 2008 (73 FR 75244).

Most Recent 5-year Review: n/a

Other: Candidate Conservation Agreement, 26 August 2008.

Threats: Threats to the population in Big Bend National Park (BIBE), Texas, include changes in the wildfire cycle and vegetation structure, trampling from humans and pack animals, grazing, trail runoff, invasive plants and animals, and fungal infection of seeds. Threats to the Maderas del Carmen population (Coahuila, Mexico) are presumed to be similar. The status of other Mexican populations is unknown. The species is globally threatened by the scarcity of populations, small population sizes, isolation of populations, and limited genetic diversity. The species is not protected under Mexican protected species law (Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT) 2009). The 2009 Candidate Assessment Form (draft) includes more information on threats.

Target: The 5-year goals for Guadalupe fescue are to prevent the decline of the existing populations, and to increase our knowledge of the global range of the species and status of its populations. This can be accomplished through conservation, appropriate management, monitoring of the two known populations, and documentation of new and historic populations.

Measure: The status of Guadalupe fescue may be improved by accomplishing one or more of the following:

Rediscover and conserve three historic, documented populations in Guadalupe Mountains National Park, in Texas (Texas Parks and Wildlife Department 2007; Poole et. al. 2007), and in the Mexican State of Coahuila in the Sierra de la Madera and an unnamed site northwest of Fraile (Tropicos 2009).

Discover and conserve additional populations in New Mexico, Texas, or the Mexican States of Coahuila or Chihuahua (or elsewhere).

Actions: The following actions are based on the Candidate Conservation Agreement (USFWS, BIBE and GUMO 2008) and the Candidate Notice of Review (2009). These must be implemented over the next 5 years (2010-2014) to meet the species targets.

Listing Factor and Threats	Action	Responsible Parties	Target Dates	Estimated Cost (dollars)
A. Trampling, grazing, trail runoff, invasive plants and animals	Protect known population at BIBE.	BIBE	Continuous, beginning in 2010	$10K annual
A. Trampling, grazing, invasive plants and animals	Pursue cooperative efforts with Mexican agencies, academic and NGO groups to conserve existing population at Maderas del Carmen.	BIBE, USFWS CONANP CONABIO	Continuous, beginning in 2010	$20K total
E. Few populations, small population size, isolation of known populations, limited genetic diversity.	Search for historic populations at GUMO (Texas) and at Sierra de la Madera and NW of Fraile, Coahuila; search for new populations in high-potential sites in New Mexico, Texas, Coahuila, Chihuahua, Nuevo León and Zacatecas.	GUMO BIBE USFWS CONANP CONABIO Academic researchers	2010 - 2014	$30K total

Acronyms used in this table:
USFWS: U.S. Fish and Wildlife Service
BIBE: Big Bend National Park
GUMO: Guadalupe Mountains National Park
NGO: Non-Governmental Organization
CONANP: Comisión Nacional de Areas Naturales Protegidas
CONABIO: Comisión Nacional para el Conocimiento y Uso de la Biodiversidad

Role of other agencies:

National Park Service (NPS). The only known extant population in the U.S. is in the Chisos Mountains, Big Bend National Park, Texas. A historic population occurred in McKittrick Canyon, Texas, now part of Guadalupe Mountains National Park. The roles of these national parks are described in detail in the revised Candidate Conservation Agreement (USFWS, BIBE and GUMO 2008). Specific actions at BIBE include protection and annual monitoring of the existing population, invasive species control, training for park personnel, visitor outreach and education, scientific investigation on the fire ecology and soil seed bank, and cooperative efforts with Mexican agencies.

CONANP (National Commission on Protected Natural Areas). This Mexican Federal agency is a division of the SEMARNAT. CONANP is the agency with oversight over the Maderas del Carmen protected natural area, which is owned and managed by CEMEX (Cementos Mexicanos, a cement manufacturer).

CONABIO (National Commission for the Knowledge and Use of Biodiversity). This Mexican Federal agency, also a division of SEMARNAT, has lead authority on protected species.

Role of other ESA programs:

The existing Candidate Conservation Agreement identifies Section 6 grants and the NPS Endangered Species Program among the potential sources of funding for conservation of Guadalupe fescue.

Role of other FWS programs: Due to the binational range of Guadalupe fescue, the USFWS Division of International Affairs will be instrumental in seeking coordination and support from Mexican agencies. Specifically, the U.S. – Mexico Wildlife Without Borders program funds biodiversity conservation in Mexico, and is a potential source of support for conservation actions that would be conducted by Mexican organizations in Mexico.

Additional funding analysis: Additional funding is needed for seed and germ plasm banking, research on propagation and reintroduction, determination of the fire ecology, genetic structure and reproductive biology of the species, and other actions specified in the Candidate Conservation Agreement between the U.S. Fish and Wildlife Service (USFWS), Big Bend National Park, and Guadalupe Mountains National Park (GUMO) (1998 and 2008). Furthermore, we will need to conserve any new or historic populations discovered during surveys in the U.S. or Mexico. Support for a prescribed burning program will be needed if researchers determine that Guadalupe fescue, like many grasses, benefits from periodic wildfire. The success of pilot reintroductions would make it possible to establish multiple refugium populations that mitigate the risk of the catastrophic loss of one or more natural populations.

Measure: The status of Guadalupe fescue may be improved by accomplishing one or more of the following:

Demonstrate successful reintroduction and establishment of viable populations in the wild initiated with material stored at a seed or germ plasm bank.

Eliminate a specific threat to a known population, or demonstrate that a potential threat is not pertinent.

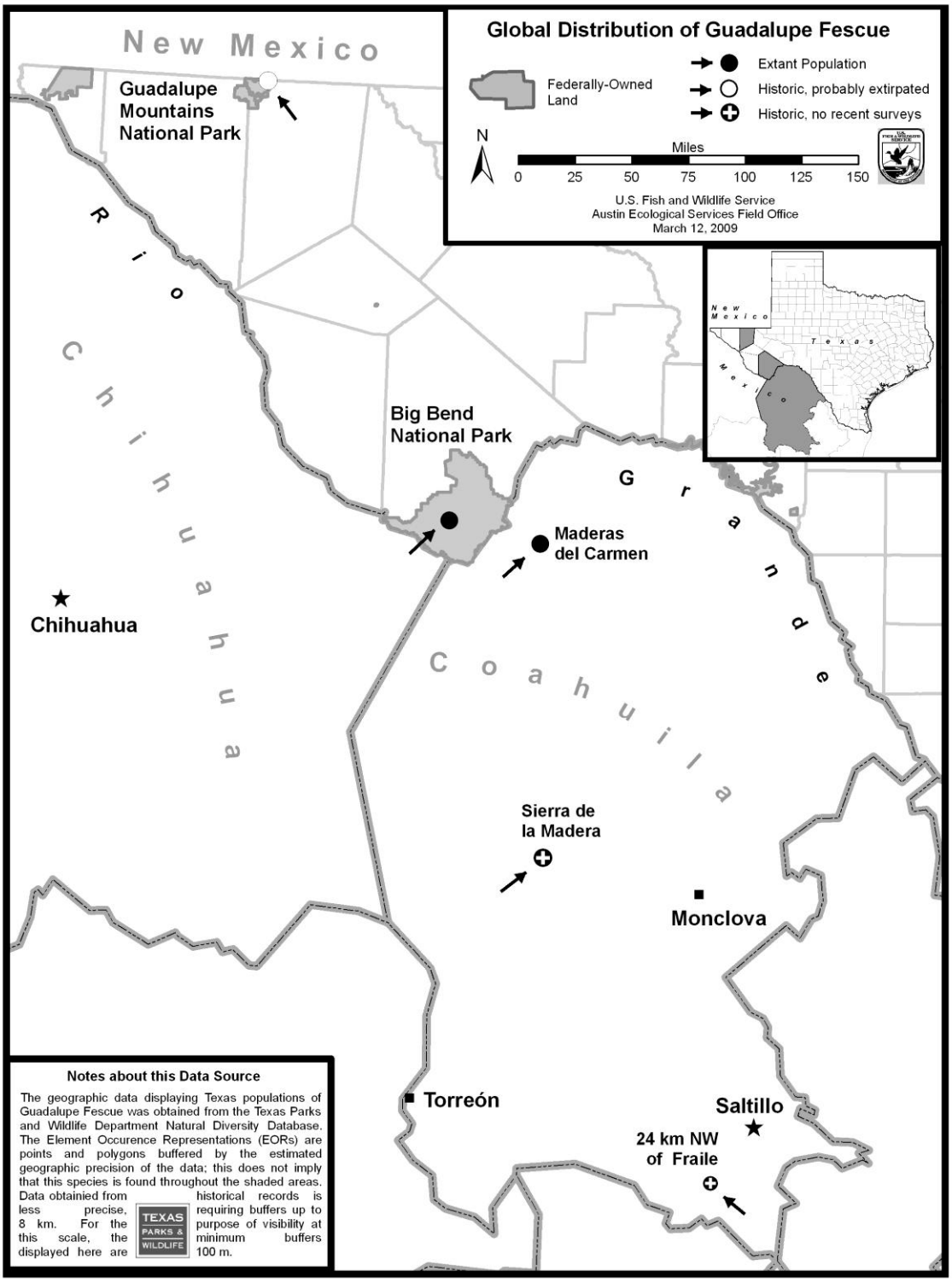
Determine the role of fire on reproduction and long-term survival of Guadalupe fescue populations, and manage accordingly.

Determine the genetic structure of known populations and determine the reproductive biology (obligate or facultative outcrosser, self-fertile, obligate or facultative asexual reproducer). Apply this knowledge to develop genetics management and reintroduction plans, and manage accordingly.

Actions: The following actions are based on the Candidate Conservation Agreement (USFWS, BIBE and GUMO 2008) and the Candidate Notice of Review (2009). These must be implemented over the next 5 years (2010-2014) to meet the species targets.

Listing Factor and Threats	Action	Responsible Parties	Target Dates	Estimated Cost (dollars)
A. Changes in wildfire cycle and vegetation structure.	Investigate the role of fire on reproduction and long-term survival of Guadalupe fescue.	BIBE USFWS Academic researchers	2010 – 2014	$40K total
E. Few populations, small population size, isolation of known populations, limited genetic diversity.	Establish seed bank and germ plasm (live plant) refugia for known U.S. and Mexican populations.	USFWS BIBE CONANP CONABIO Academic or NGO groups	2010 - 2012	$30K total
E. Few populations, small population size, isolation of known populations	Investigate soil seed bank, seed viability, and techniques for successful reintroduction and restoration of wild populations.	BIBE USFWS GUMO Academic researchers	2010 - 2014	$30K total
E. Limited genetic diversity.	Investigate genetic structure of known populations and determine reproductive biology. Develop genetics management and reintroduction plans.	USFWS Academic researchers	2010 - 2014	$100K total

Figure 1. Global distribution of Guadalupe Fescue.



Literature Cited:

Poole, J. M., W. R. Carr, D. M. Price and J. R. Singhurst. 2007. Rare Plants of Texas. Texas A&M Press, College Station, Texas. 639 pp.

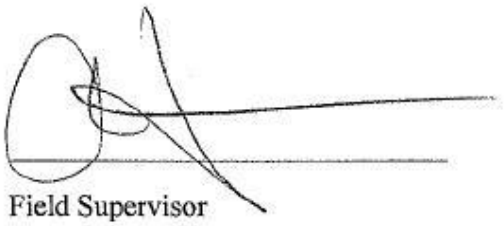
Secretaria del Medio Ambiente y Recursos Naturales. 2009. Normas Oficiales Vigentes Ordenadas por Materia. NOM-059-ECOL-2001. http://www.semarnat.gob.mx/leyesynormas/Pages/normasoficialesmexicanasvigentes.aspx. México, D. F. Accessed March 6, 2009.

Texas Parks and Wildlife Department. 2007. Texas Natural Diversity Database. Texas Parks and Wildlife Department, Austin, Texas.

Tropicos.org. Missouri Botanical Garden. 20 Feb 2009. http://www.tropicos.org/Name/25512045. Accessed: March 12, 2009.

U.S. Fish and Wildlife Service and Big Bend National Park. 1998. Conservation Agreement for *Castilleja elongata* (Tall Paintbrush) and *Festuca ligulata* (Guadalupe Fescue). 17 pp. + Appendices. U.S. Fish and Wildlife Service, Austin Ecological Services Field Office.

U.S. Fish and Wildlife Service, Big Bend National Park, and Guadalupe Mountains National Park. 2008. Candidate Conservation Agreement for *Festuca ligulata* (Guadalupe Fescue). 18 pp. + 5 pp. appendices. U.S. Fish and Wildlife Service, Austin Ecological Services Field Office.



Field Supervisor

August 7, 2009

Date